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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH ADMINISTRATION
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
WASHINGTON 25, D. C.

In cooperation with State, Federal, and Other Agencies

# COTTON INSECT CONDITIONS FOR WEEK ENDING JULY 29, 1949

(Seventh Cotton Insect Survey Report for 1949)

There has been little change in the boll weevil situation during the past week. In many fields the infestations are light. There are also many fields in most areas where the infestations are high and insecticides are urgently needed to prevent serious reduction in the yield and quality of the cotton crop. The organic insecticides for cotton insect control are scarce in most areas. Where the boll weevil is the chief insect to be controlled, calcium arsenate is as effective as any insecticide, especially at this season to protect the bolls from weevil injury. The proper use of calcium arsenate during August, in all fields that have large numbers of immature bolls and heavy infestations of boll weevils, would result in the saving of many thousands of bales of cotton. The entomologists in several of the States have issued recommendations in regard to protecting the cotton crop from boll weevils during the remainder of this season. Their advice should be followed.

Critical shortages of formulations containing toxaphene or benzene hexachloride have been reported in most of the States where the boll weevil occurs. Some shortages of calcium arsenate and mixtures of calcium arsenate and other materials have been reported locally in most of the States where the boll weevil occurs except Texas.

## INSECTICIDES

ALABAMA: Calvin M. Jones, Auburn, reported on July 29: "A very small percent of the farmers in the Tennessee Valley are dusting or have made definite plans to dust. Calcium arsenate is available in most of the counties but the supply is small. Toxaphene is the preferred dust. Practically no BHC-DDT mixture has been sold. Shipments of toxaphene received have not been regular and are small. Sprayers are operating in Lauderdale County (12 tractor sprayers and 1 plane sprayer), Lawrence County (4 sprayers), Colbert County (several), and Franklin County.

"The County Agent in Franklin County has a daily radio program which is devoted largely to cotton insect control. Bankers are offering credit to finance dusting operations where needed."

MISSISSIPPI: Clay Lyle addressed a letter to all county agents on July 27 on the subject "Shortage of Insecticides" in which he presented a series of suggestions concerning insecticides for cotton insect control prepared in collaboration with several entomologists concerned with cotton insect control in Mississippi as follows: "1. In some sections there are supplies of neutral calcium arsenate containing 1% gamma BHC which farmers are not buying apparently because they don't want calcium arsenate. This should be very effective against both weevils and lice if used in every application, especially in the late afternoon.

"2. Salesmen are offering mixtures of 10% chlordane and 40% sulphur in several sections. Chlordane gives such variable results in hot weather this mixture is not approved for use in Mississippi.

"3. Liquid applications are experimental but may give excellent results if enough chemical is used. In applying toxaphene materials, not less than 2 pounds of technical toxaphene per acre ($\frac{1}{2}$ gallon of 4-pound emulsion) should be used. Some farmers are using less than 1 pound per acre and will be disappointed with the results

"4. BHC and toxaphene are short but there seems to be plenty of unmixed parathion available. We may be able to get mixtures of 1% parathion in neutral calcium arsenate shipped into Mississippi during the next week. Applied in late afternoon at 10 pounds per acre the parathion should control lice while the calcium arsenate gets the weevils.

"5. If calcium arsenate plus 2% nicotine is available it should be used as recommended, alternately with straight calcium arsenate.

"6. If the preferred chemicals are not available, urge your farmers to dust with straight calcium arsenate and by the time lice develop they may be able to get the 1% BHC or parathion in neutral calcium arsenate, which, if applied in the late afternoon, should prevent serious damage from both lice and weevils.

"We are doing everything we can to secure supplies of insecticides but farmers who are opposed to using calcium arsenate may have to use it---or lose their crop."

C. C. Smith, Staple Cotton Cooperative Association, Greenwood, wrote on July 28: "We have 1,400,000 acres of cotton in the Delta and a recent survey shows that there is about enough benzene hexachloride and toxaphene to poison something over 300,000 one time within the next two weeks. There is some liquid toxaphene being used, but we do not know the amount of the supplies available.

"We are struggling desperately to secure material for our members, and if you are in position to refer us to any company, or companies, having this material, we are in position to take it promptly.

"We can get some calcium arsenate, but the growers do not want to use it as they fear difficulty with aphids and the lowering of the grades of their cotton.

"It is necessary that we get some relief immediately as poisoning may stop around August 15 to August 20."

OKLAHOMA: C. F. Stiles, Extension Entomologist, wired on July 31 that there was an acute shortage of the new organic insecticides in Bryan and Wagoner Counties and that the insecticide supplies were low in Le Flore and Okfuskee Counties.

TEXAS: Scarcity or shortage of insecticides, especially toxaphene, the 3-5-40 mixture, and 10% DDT, has been reported from Delta, Hunt, Terry, Williamson, Ellis, Rockwall, and Kaufman Counties.

TENNESSEE: Harrold B. Jones reported on July 29: "There is a severe shortage of both organics and calcium arsenate."

Excerpts from Weekly Cotton Weather Bulletin issued by the Weather Bureau, U. S. Department of Commerce, New Orleans, Louisiana, July 26.

ALABAMA: Frequent showers central and south very favorable for weevils, hampered control measures; cotton blooming freely, some slight shedding, too much stalk growth.

ARIZONA: Liberal dusting all areas for insects.

ARKANSAS: Very favorable for weevils central and southern counties.

CALIFORNIA: San Joaquin Valley COTTON progressing very well, blooming about over, bolls setting nicely; Palo Verde Valley COTTON progressing very well, some plants half-grown bolls.

GEORGIA: Too much rain; very favorable for boll weevils, light to moderate deterioration COTTON, condition fair to fairly good.

LOUISIANA: Weather very favorable for weevils, poisoning ineffective due rain and short supply; condition ranges good to locally excellent.

MISSISSIPPI: Condition varies widely but generally good, some rank growth, poisoning for weevils hindered by rain and short supply.

MISSOURI: Cotton condition fairly good, shedding due continued wet weather.

NEW MEXICO: Continued warm, frequent showers; excellent growing weather.

NORTH CAROLINA: Condition fair to good, weevils remain under control, some reports heavy damage.

OKLAHOMA: COTTON holding up well, condition and progress fair to good, more rain needed soon, squaring heavily, late blooming, weevil infestation bad untreated fields east, weather favorable for checking.

SOUTH CAROLINA: COTTON condition, progress improving, mostly good, many full bolls South, forming well north, weather favorable for checking weevils but still numerous.

TENNESSEE: COTTON good condition and progress.

TEXAS: Bollworm and weevil increasing but control measures effective with damage thus far relatively light.

THE TEXAS WEEKLY CROP AND WEATHER BULLETIN, Austin, July 19, stated: "Fleahoppers were becoming prevalent in northwest areas, but serious damage was being averted by control measures. Bollworms were causing considerable concern in some southern and southeastern counties and effective control was hindered by frequent showers," and on July 26 stated: "Bollworm infestations continued to cause concern in southern and southeastern counties and boll weevil populations were increasing in northern and eastern areas. Control measures have been effective, however, and damage thus far has been comparatively light."

## BOLL WEEVIL

VIRGINIA: Boll weevil infestations in Virginia are low considering the heavy infestations that occur in adjacent counties in North Carolina. G. M. Boush, Assistant Entomologist, Tidewater Field Station, Holland, examined 8 fields in Nansemond County on July 27 and the highest infestation was 12% punctured squares.

NORTH CAROLINA: Boll weevil infestations continued high. The average infestation in 101 fields in 20 counties was 83%. The infestation ranged above 90% punctured squares in more than half of the fields examined. These high infestations were not reached last year until the latter part of August when the squares became scarce. In some of the older and more mature fields there are some large bolls, but in most fields cotton is still blooming and very few large bolls are present. These fields will suffer serious damage unless weevils are controlled by the proper use of insecticides or hot, dry weather. All of the older fields should be dusted to protect the bolls that are set.

The average infestation in 16 unpoisoned fields in Scotland, Hoke, and Robeson Counties was 95% punctured squares as compared with 22% in 22 poisoned fields.

SOUTH CAROLINA: High temperatures prevailed. Some sections are very dry, while others are wet. Boll weevils are migrating and fields that were poisoned and the treatment discontinued are showing an increase in infestations. Fields where poison is still being applied are holding the crop set and are still blooming. All unpoisoned fields have stopped blooming. The average infestation in 66 unpoisoned fields in 20 counties was 82% punctured squares, as compared with 36% in 34 poisoned fields in 18 counties.

Thirty-two boll weevils were collected from a flight screen located in a trap plot of cotton at Florence on July 26 and 18 were collected July 29. This indicates that weevils are now moving from field to field in considerable numbers.

L. M. Sparks, Jr., Extension Specialist, reported on August 1: "Experiments conducted last year showed that late season dusting will definitely pay. In addition to protecting the young bolls until they are too large for weevils to injure, you will also kill large numbers of weevils that would normally go into hibernation in the woods and fields surrounding your cotton. It is therefore recommended that where cotton is still growing vigorously and fruiting heavily that three applications of poison be applied as soon as migration is noted. The applications should be made at four-day intervals. It may take 12 to 14 pounds of poison per acre application if the cotton is large."

GEORGIA: P. M. Gilmer, Tifton, wrote on July 29: "Conditions have been favorable for weevil control over most of the state this week and we have some hopes of stopping boll damage because of it. There has been a considerable amount of boll injury, just how much it is hard to estimate. I checked a few fields in Colquitt, Brooks, and Lowndes Counties this week and found in dusted fields about one-fourth to one-half the bolls set on the top or top middle damaged in one or more locks on dusted cotton, with the rest of the crop, that is most of it at least half way up in good condition. Undusted fields showed a pitiful situation. One field had about 4 to 5 bolls per plant set only, and of those about half to two-thirds were completely damaged by weevil punctures and the associated boll rots. Still, prospects do not lood too bad considering what we have had to fight, and I believe most men who have dusted fairly regularly will be satisfied with what they get from it.

"North Georgia looks bad still. Cotton is very irregular in fruiting, although possibly some of the late cotton may do better than I believe it will."

ALABAMA: Boll weevils were found in all of the 64 fields examined in 10 counties of the Tennessee Valley. Only 4 of the 64 fields examined had less than 10% of the squares infested. In 16 of the fields the percentage of punctured squares ranged from 11 to 25%, in 22 fields the range was from 26 to 50% and in another 22 fields more than 50% of the squares were punctured.

TENNESSEE: Harrold B. Jones, Extension Cotton Ginning Specialist, wrote on July 29: "We have an infestation of approximate average of 35% in the counties of Hardin, McNairy, Hardeman, Fayette, Shelby, Tipton, and Haywood. On July 5 we inspected cotton fields in the Southern part of Tipton County, adjoining Fayette County, and found no weevil infestations. On July 19 we checked five fields in the Northern part of Tipton County near the Lauderdale County line and found slight infestation. This was interesting to note, since the migration took place in the period of fourteen days. As yet, no weevil signs have been found in Lauderdale, Dyer, or Lake Counties."

MISSISSIPPI: Clay Lyle, Entomologist, reported on August 1: "The cotton insect situation in Mississippi changed little during the past week. Frequent rains occurred nearly all over the state, poison was scarce, and the boll weevil infestation continued to rise. Examinations of 431 farms in 47 counties showed weevils on 420 with an average infestation of 44%, which compares with 34% last week and 21% at this time last year. Of 238 farms examined in the Delta, 227 had an average infestation of 40%. All farms in the hill sections of the state were infested."

In the Delta counties 100 of the 227 infested fields examined had infestations that ranged between 40 and 99% punctured squares. Many heavily infested fields occurred in every Delta county. The Delta and Pine Land Company in Bolivar County reports that weevils were found in 313 of the 325 fields examined. In 116 infested fields not more than 10% of the squares were punctured. In 102 fields the infestations ranged between 11 and 25%. In 68 fields the range was between 26 and 50% punctured squares, and in only 27 fields were more than 50% of the squares punctured.

LOUISIANA: Weather has continued very favorable for weevil development. Rains and showers have interfered with and interrupted poisoning program. Many treatments have been washed off shortly after application. The supplies of poisons remained tight as was previously reported. The average boll weevil infestation in 396 fields in 12 parishes was 32% punctured squares as compared with 21% during the same week in 1948, 19% in 1947, 51% in 1946, 31% in 1945, 10% in 1944, and 28% in 1943. Punctured squares were found in 394 of the 396 fields examined. The infestation ranged from 1 to 10% in 63 fields; from 11 to 25% in 46 fields; from 26 to 50% in 102 fields, and more than 50% of the squares were punctured in 83 fields.

ARKANSAS: Rains and showers have been most favorable for rapid boll weevil development and have interfered with and interrupted the poisoning programs. Boll weevil infestations are high in most southern areas. The average infestation in 60 fields in 6 southeastern counties was 51% punctured squares as compared with 43% last week, 29% two weeks ago, and 16% during the same week in 1948, 3% in 1947, 37% in 1946, 11% in 1945, 3% in 1944, and 7% in 1943. Boll weevil punctured squares were found in 59 of the 60 fields examined. The infestation ranged from 1 to 10% in 3 fields; from 11 to 25% in 6 fields; 26 to 50% in 24 fields; over 50% in 26 fields.

The boll weevil infestations in 225 fields in 3 southwestern counties averaged 23%. Of the 225 fields examined, 218 were infested. The infestation was from 1 to 10% in 48 fields; from 11 to 25% in 100 fields; from 26 to 50% in 43 fields; over 50% in 27 fields.

The average boll weevil infestation in 28 fields in 5 eastcentral counties (Phillips, Lee, St. Francis, Cross, and Crittenden) averaged 7% punctured squares. Of the 28 fields examined, 18 were infested. The infestation ranged from 1 to 10% in 13 fields from 11 to 25% in 4 fields; more than 50% of the squares were punctured in 1 field.

TEXAS: Weather conditions continued favorable for boll weevil development, and serious weevil damage is being caused in many fields in north central, central, and south central areas. The average infestation in 642 fields in 39 counties was 15% as compared with 15% last week. No punctured squares were found in 103 of the fields examined. In 272 fields the infestation ranged from 1 to 10%, in 140 fields from 11 to 25%, in 38 fields from 26 to 50%, and in 44 fields more than 50% of the squares were punctured. The average infestation in 115 fields in McLennan and Falls Counties was 24% punctured squares as compared with 26% last week.

OKLAHOMA: The third generation of boll weevils are now emerging in the southern part of the State and will be emerging from fallen squares over the eastern half of the State within a week. Weevil infestations in early-planted cotton are unusually heavy. Late-planted cotton, thus far, has escaped serious weevil damage, but with the large number of weevils in the old cotton and migration beginning, probably next week serious damage may be expected in all fields of late-planted cotton unless they are protected from weevil damage by the use of insecticides. The average infestation in 132 fields in 20 counties was 33% punctured squares as compared with 13% last week. No punctured squares were found in 15 fields in Grady, Cleveland, McClair Stephens, Garvin, Murray, Marshall, and Carter Counties. In 39 fields the infestation ranged from 1 to 10%, in 15 fields from 11 to 25%, in 22 fields from 26 to 50%, and in 41 fields more than 50% of the squares were punctured.

C. F. Stiles, Extension Entomologist, wrote on July 29: "The boll weevil situation in fields of early-planted cotton is as heavy now as it should be on August 15 after migration. The fields are literally alive with them. If we get a few showers during the next two weeks, I believe that the young cotton will be practically destroyed. We have more farmers dusting this year than ever before and they still are not getting control."

## BOLLWORM

TEXAS: The examination of 17,300 terminals in 67 fields in McLennan and Falls Counties showed an average of 2 eggs and 1.5 larvae per 100 terminals. Bollworm injured squares averaged 4.3% in 70 fields and bollworm injured bolls averaged 4.9% in 63 fields. The infestation is on the decline in all but young or extremely succulent fields. Damage in general has been light, but control measures are being used in some fields for the control of this insect.

OKLAHOMA: Bollworm eggs and bollworms in various sizes can be found in all fields of rank cotton in the eastern half of the State.

LOUISIANA: L. D. Newsom reported: "We are confronted with a critical situation in the northwestern part of the state. A heavy bollworm infestation has developed in the area. Fields which have been dusted are most heavily hit. However, heavy infestations are developing where no insecticides have been applied. There are several unusual features about this condition. Where eggs have usually been deposited in terminals in past years, a large percentage are being deposited on bracts around squares and young bolls. Many early instar larvae are going directly into bolls.

"To make matters worse we have had impossible weather for the past week. Insecticide applications for the most part have remained on plants no longer than 4 or 5 hours."

ARKANSAS: Bollworms have been reported in many fields in the southwestern portion of the State.

## COTTON LEAFWORM

TEXAS: The second cotton leafworm of the season was found in Refugio County on July 25 by L. F. Greer. The first leafworm was reported in Calhoun County on July 18 by Mr. Greer.

## MISCELLANEOUS INSECTS

ALABAMA: Cotton boll cutworms or yellow-striped armyworms were noted in small numbers in Jackson, Madison, and Marshall Counties. Light infestations of aphids were noted in 23 of the 64 fields examined in 10 Tennessee Valley Counties.

LOUISIANA: Cotton aphids have increased in the northeast section of the State.

NORTH CAROLINA: Light infestations of red spider were observed over the State, but no serious damage has occurred. A few fields in Hertford and Wilson Counties have light aphid infestations.

SOUTH CAROLINA: Red spiders were noted in some fields, but the infestations are light.

TENNESSEE: Harrold B. Jones reported on July 29 that Lauderdale, Dyer, and Lake Counties have suffered severely from the cotton aphid.

## COTTON FLEAHOPPER, TARNISHED PLANT BUG, RAPID PLANT BUG, AND OTHER MIRIDS

TEXAS: Cotton fleahopper infestation in general remains low, but hoppers are present in sufficient numbers in many fields in north, central, west central, northwest, and South Plains areas to require control. The average infestation in 633 fields in 49 counties was 3.4 fleahoppers per 100 terminals. No fleahoppers were found in 216 of the fields examined. In 331 fields the infestation ranged from 1 to 10 fleahopper per 100 terminals, in 78 fields from 11 to 25, and in 8 fields in Brazoria, Dallas, Reeves, Runnels, and Dawson Counties more than 50 fleahoppers were found per 100 terminals.

OKLAHOMA: Cotton fleahopper infestation remains light in the eastern part of the State. No records were made in the extreme western counties. The average infestation in 132 fields in 20 counties was 1.8 fleahoppers per 100 terminals. No fleahoppers were found in 68 of the fields examined. The infestation ranged from 1 to 10 fleahoppers per 100 terminals in 68 fields, and from 11 to 25 in 5 fields.

MISSISSIPPI: Of the 227 fields examined in 17 Delta counties, tarnished plant bugs were reported in 13 fields, rapid plant bugs in 12 fields, and cotton fleahoppers in 3 fields.

TENNESSEE: Tarnished plant bugs, leafhoppers, and other insects of minor importance are appearing in significant numbers. (J. O. Andes, August 1)

Harrold B. Jones reports that the cotton fleahopper has caused serious damage in Lauderdale, Dyer, and Lake Counties.

ALABAMA: Rapid plant bugs were noted in 27 of the 64 fields examined in 10 Tennessee Valley Counties.

## INSECTS ON IRRIGATED COTTON OF THE SOUTHWEST

ARIZONA: There was little change in the injurious insect population on cotton in the Salt River Valley, although stink bugs increased in many fields. Bollworms were observed in the Gilbert and Chandler areas. Dusting and spraying for cotton insect control continued on a large scale. In Pinal County injurious insects continued to infest some fields, even though they had been dusted. *Lygus* spp. predominate in all fields where the count is high. Bollworms were found in 14 of the 23 fields examined. In some fields the infestation is heavy enough to require control. The injurious cotton Hemiptera population in the Santa Cruz Valley remains low in fields that have been dusted. Bollworm infestations are increasing in some fields. Bollworms are also a serious threat in the Safford Valley.

NEW MEXICO: Cotton insects showed a decided decrease in the Pecos Valley during the week. Excellent control of *Lygus* spp. and cotton fleahopper has been obtained by the use of insecticides.

TEXAS: Bollworms in the El Paso Valley increased, but serious infestations are spotted. Some poison is being applied for their control. The cabbage looper is in some cotton fields. This insect is confused with the cotton leafworm. One report stated that the cotton leaves were being "ragged." Good stink bug control is being obtained with insecticides. Lygus spp. populations remain low. Insecticides have previously been used for their control in a number of fields in the El Paso Valley.

CALIFORNIA: O. D. McCutcheon, Assistant Farm Adviser, Hanford, Kings County, wrote on July 26: "Cotton insect infestations have been fairly heavy this year. Western flower thrip was abundant in most fields during the earlier part of the season. The dauber has been quite plentiful this year and at the present time bean thrips are showing up on some of the fields in the west side of the county. Red spider has been heavy in many cotton fields particularly near the Kings River. Infestations of red spider have greatly decreased during the past few weeks, but it is still abundant in many fields. We had very little injury from aphid infestations earlier in the season. However, during the past few weeks, aphid infestations have become more numerous. We expect heavy infestations of aphids this fall if the farmers irrigate late. Late irrigations are an open invitation to late Autumn infestations, since they provide an abundance of succulent growth for the aphid population to produce and eat on.

"The yellow-striped armyworm made its appearance in alfalfa fields during May and a second infestation appeared about July 10 - 15 which was quite heavy. Migration from alfalfa to cotton fields occurred in the alfalfa producing area of the county. Bands of DDT and sulfur had to be placed between the alfalfa and the cotton fields in order to prevent migration to the cotton. We expect another outbreak of this insect within the next 4 to 5 weeks. Damage was pretty much confined to alfalfa since the farmers were alerted in sufficient time to ward off infestation."

PREPARED AUGUST 5, 1949

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